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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,406	03/27/2006	Koichi Watanabe	017447-0194	2973

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EXAMINER

BERMAN, JASON

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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11/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,406	Applicant(s) WATANABE ET AL.	
	Examiner Jason M. Berman	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/19/09.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 4-9, 12 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/27/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

Claims 1-13 are pending in the current application.

Claims 4-9 and 12-13 are withdrawn as being directed towards a non-elected invention.

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-3 and 10-11) in the reply filed on 8/19/09 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claim 1, 3 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ceasar (US 4,416,755) in view of Kanzaki (US 6,197,134).

Art Unit: 1795

As to claim 1, Ceasar discloses a sputtering target which consists essentially of silicon (col 8 lines 31-34: pure silicon sputtering target) which is polycrystalline in nature (col 8 lines 31-34).

Ceasar, while disclosing the target is polycrystalline, is silent as to the crystal orientation ratios.

Kanzaki discloses a method of forming fcc metal targets (col 1 lines 8-10) in which the process forms a ratio of 220 to 111 is less than 1.0 (abstract; col 2). This ratio, along with other properties, is disclosed as providing desired orientations which possess all characteristics required for effective sputtering materials (col 1 lines 61-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the target with a crystal orientation ratio of Kazanki, with a silicon target of Ceasar (Silicon is inherently a FCC metalloid) because this allows for formation of an effective sputtering target.

As to claim 3, Neither Ceasar nor Kanzaki explicitly disclose the Vicker's hardness of their respective sputtering targets. However, Vicker's hardness is an intrinsic property of a material. It would therefore be inherent that a silicon target, as that of Ceasar in view of Kanzaki, would have the same hardness as any other target formed of the same materials by the same process and would therefore have a Vicker's hardness within the claimed range.

As to claims 10 and 11, Ceasar discloses the sputtering of the silicon target with oxygen (col 7 line 9) which would form a silicon dioxide film.

Art Unit: 1795

It should also be noted that the manner of operating a device does not differentiate an apparatus claim from the prior art. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structure limitations of the claim. MPEP 2114. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ceasar in view of Kanzaki, as applied to claim 1 above, and further in view of Mitsui (US 6,800,182).

As to claim 2, both Ceasar and Kanzaki are silent as to the relative density of the target.

Mitsui discloses a Silicon target for formation of a SiO₂ film at high speed (col 4 lines 50-52, abstract) in which the relative density of the target is greater than 60%, or 80% (claim 12, col 5 line 48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the target with a relative density of 80%, as disclosed by Mitsui with the target of Ceasar in view of Kazanki, because this creates an effective target for forming SiO₂ films.

Correspondence Information

Art Unit: 1795

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Berman whose telephone number is (571)270-5265. The examiner can normally be reached on M-R 8am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571)272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

/J. M. B./
Examiner, Art Unit 1795
11/13/2009